Data driven organization

Enablers and biggest pitfalls

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Risto Silvola

Over 25 years of Global Business and IT Competence from various Management roles and business areas.

People are the greatest asset when making success stories in programs, projects and daily life. People drive data values forward, technology supports when used correctly

Specialized in data driven corporate strategy utilization across business processes and IT systems.

Implemented data governance, quality and business transformations in different sizes.

Ph.D study subject: One data for integrated business processes

Data DNA concept

Current study topics:

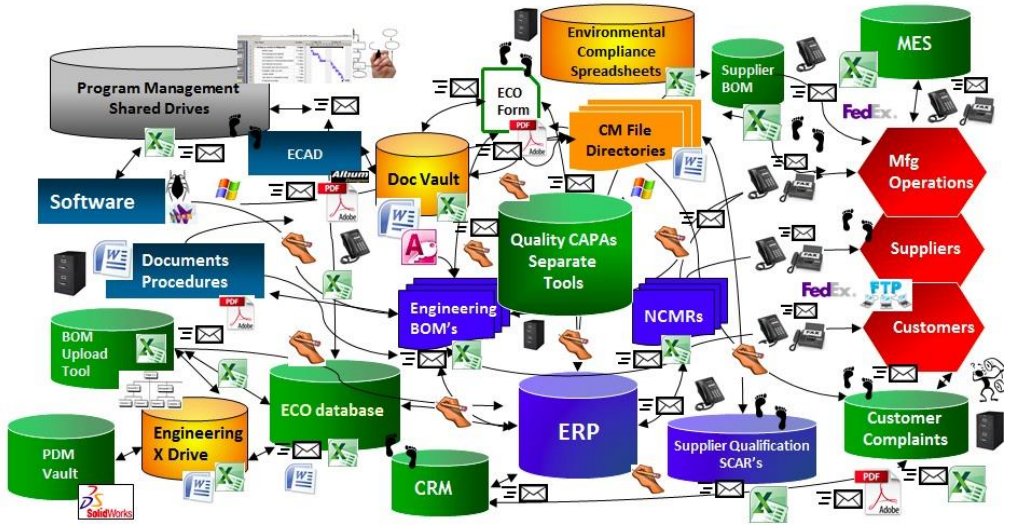
1. Ethics and values in decision making when deciding about data
2. DaaS from company internal and external view
3. Speeding up the ROI from Data related services implementations

Reason to start own academic studies back in 2012

- Business Models very ERP centric
- IT systems very loosely integrated and excel everyhwere
- Common re-usable data? Nobody obviously have ever heard about such a thing ☺

- Data processes were from 1990's

Disconnected Silos



One product data for integrated business processes

Understanding the current best practices and pitfalls relating to product master data, and understanding the type of high-level product master data concept necessary for creating data once, and then using the data across the IT systems through the life-cycle of the product are needed to tackle practical challenges in data management.

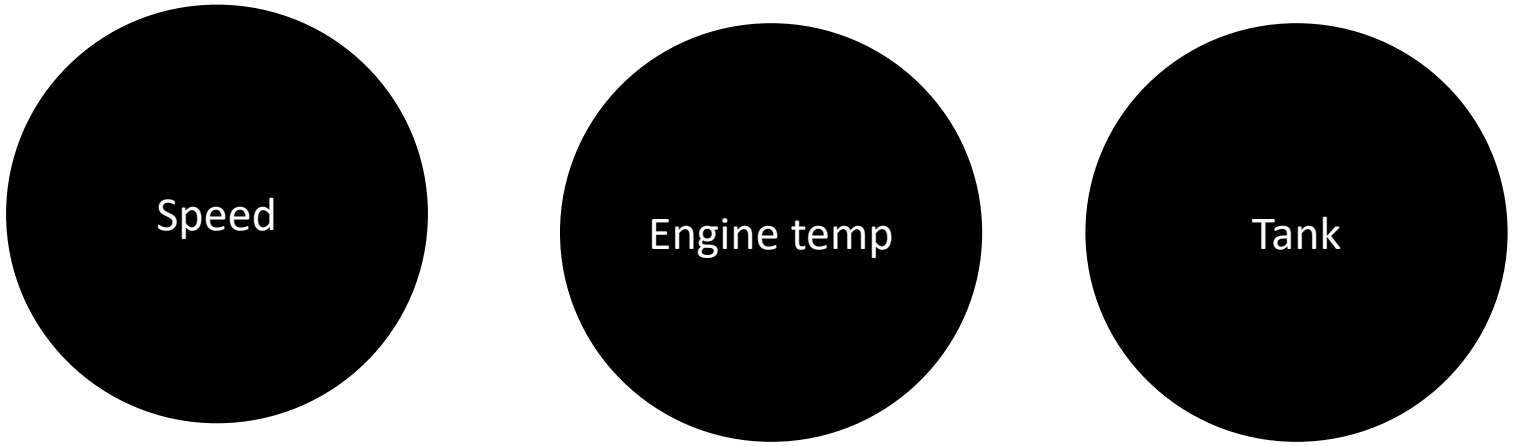
The research problem has been approached from five complementary perspectives, which can be framed as questions:

1. What are the challenges and preconditions for one product master data?
2. How can product master data ownership be implemented?
3. How can data quality be ensured?
4. What are the business process requirements for product data?
5. What is the role of PDM/PLM in the launch phase?

Data issues in real life can be fun

Car cockpit

If it would be looking like this



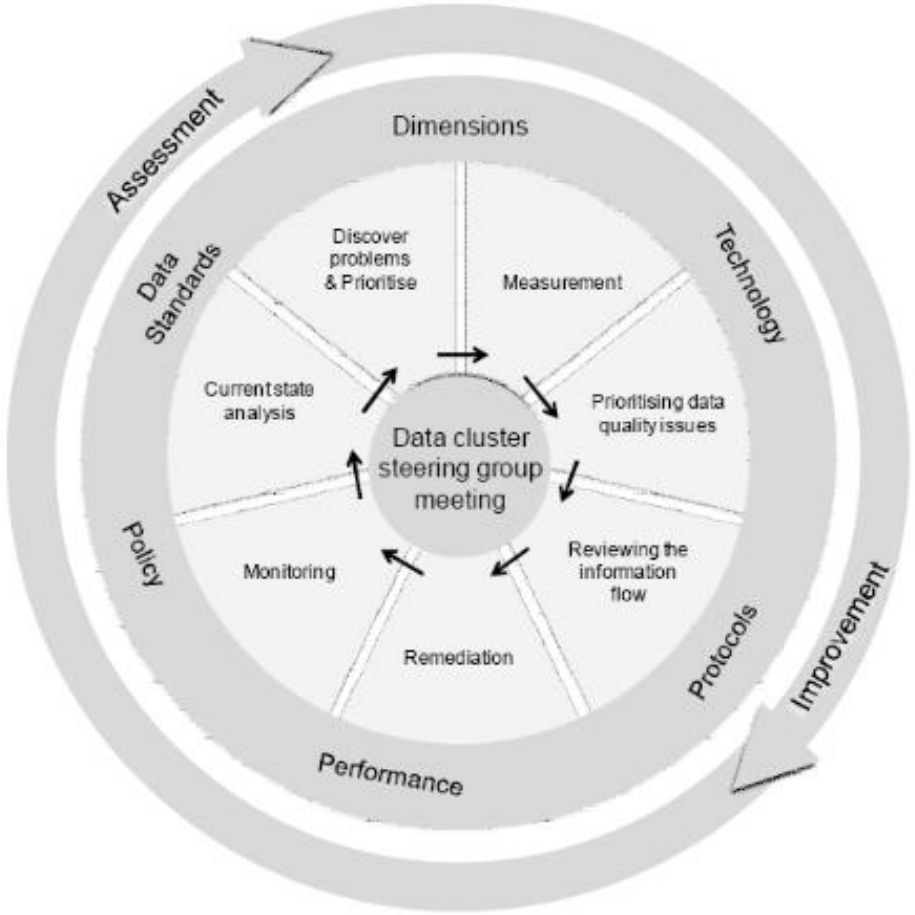
No numbers/knowledge..

Data matters

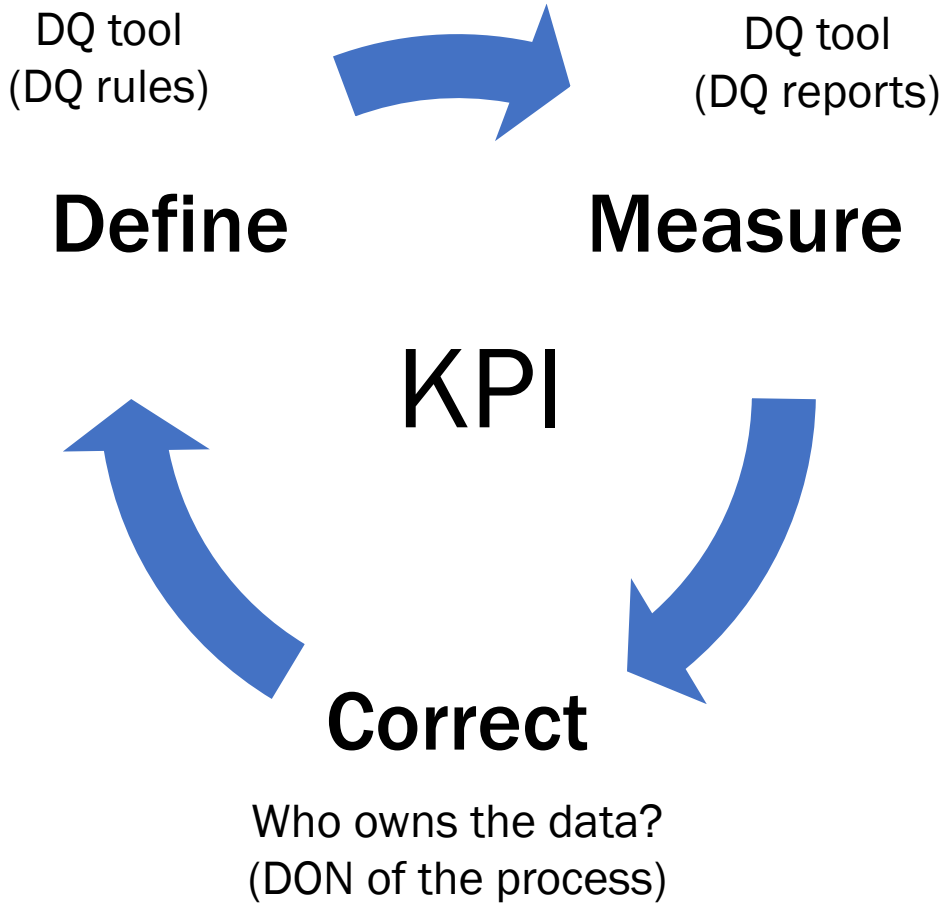
We need numbers that we can trust

Data quality, Why it matters, How to decide, how to decide about the data?

Data quality process



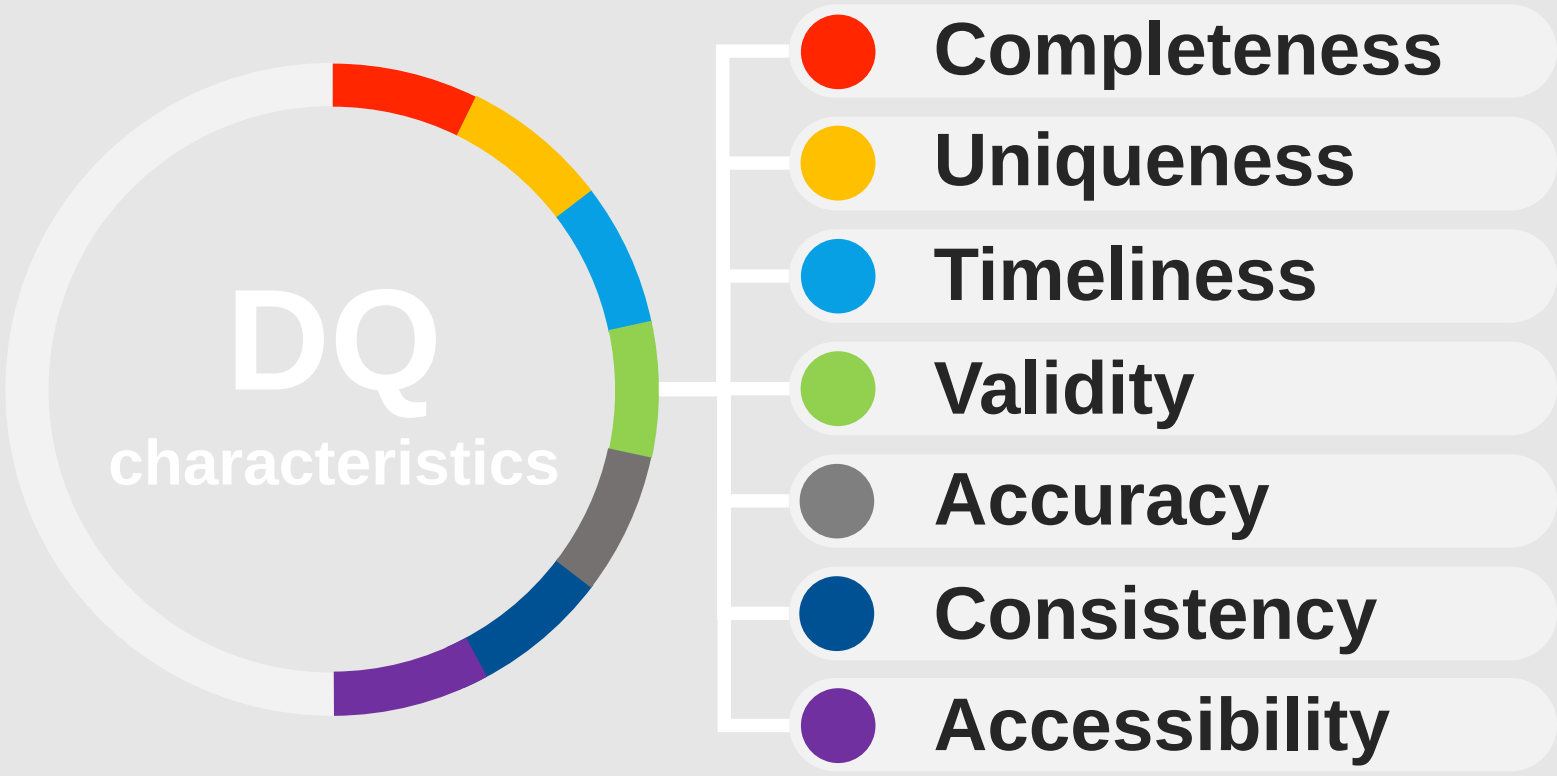
Source: Silvola doctoral thesis



Who owns the data?
(DON of the process)

Real life: DON= Data ownership network

DATA QUALITY DIMENSIONS



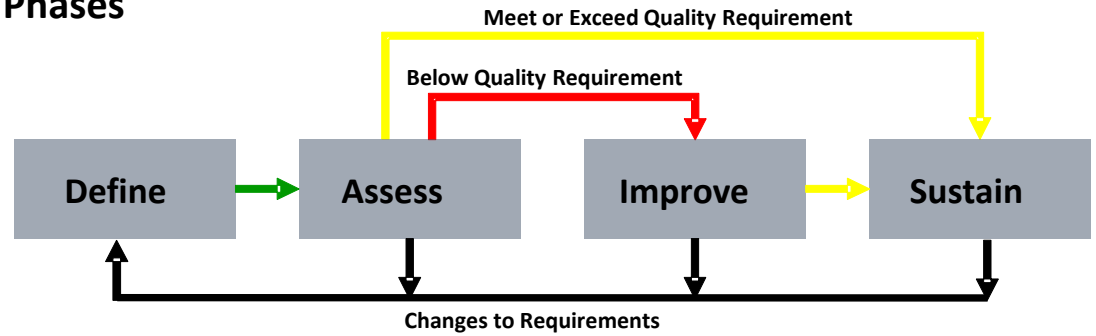
Security used to be one DQ category!

Establish Data Quality Management Framework

Data Quality Framework

- **DQF1** Define Data Quality Scope and Approach
- **DQF2** Define Data Quality Organization
- **DQF3** Define Data Quality Process
- **DQF4** Develop Data Quality Technical Infrastructure
- **DQF5** Provide Training
- **DQF6** Rollout Data Quality Program

Phases



High Level Process Procedures

Define	Assess	Improve	Sustain
• Identify Information Quality Process Scope • Identify gaps • Identify Key Data Elements • Define Data Quality Requirements Criteria • Define Data Quality Requirement Metrics	• Develop Assessment Plan • Execute Assessment Plan • Analyze Results • Perform Root Cause Analysis	• Develop Improvement Plan • Execute Improvement Plan • Re-Perform Assessment Plan • Analyze Results	• Develop Data Quality Control Environment • Implement Data Quality Control Environment • Perform Post-Implementation Review of the Data Quality Control Environment

Key Risks Addressed

• Quality requirements are unknown or are not being addressed	• Business perceives data quality levels are higher than actuality	• Source data does not meet the increased level of data quality required	• Overall data quality degrades over time • Inadequate control environment in place

Establishing Data Quality process case: customer data

Define

Data Element	Data Quality Component	Data Quality Criteria
Customer Name	Integrity	Must Be Character
	Integrity	1 <= Length <= 35
	Integrity	Cannot Be Null Or Blank
	Integrity	Must not be duplicate customer based on fields = Name, Street Address, Region, and Zip Code
	Accuracy	Legal Name Per SEC or State Incorporation
	Consistency	Naming Standards for Abbreviations
	Consistency	Must be equivalent to name in CRM system
Region (State, Province, County)	Integrity	Must Be Character
	Integrity	1 <= Length <= 3
	Integrity	Cannot Be Null Or Blank
	Integrity	Value Within Table T0001
	Integrity	US Address: Must be one of 50 States or DC
	Integrity	Canada Address: Must be one of 8 Provinces
	Integrity	Must not be duplicate customer based on fields = Name, Street Address, Region, and Zip Code
	Accuracy	State/Province in which the Corporate Headquarters Physically Exists

Assess

	(A) Assessed Data Quality	(B) Data Quality Requirement	(C) = (A) / (B) Compliance
Customer Name	**93.1%**	97%	96.0%
Region	**100.0%**	85%	100.0%

Improve

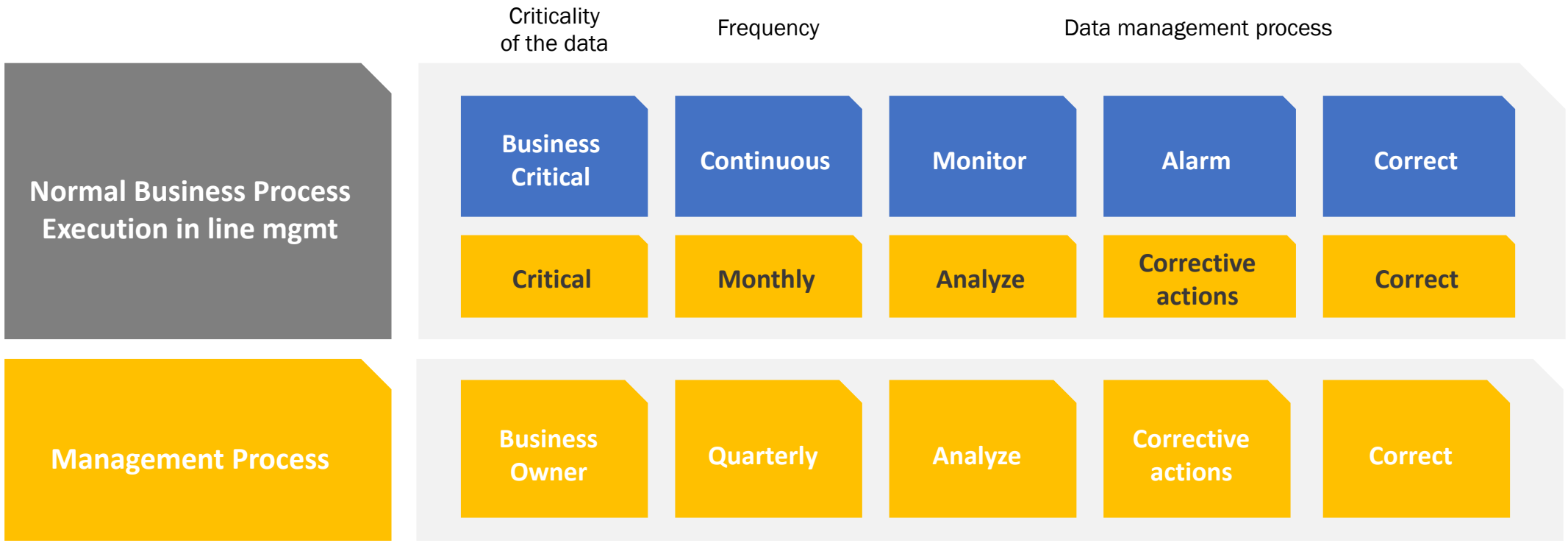
Records to Improve				
Percentage To Improve	Number of Records to Improve	Records Identified as Incorrect from Programmatic Assessment	Records Identified from Manual Assessment	Additional Records to Be Improved
3.99%	2317	2317	0	0
0.00%	0			

DATA QUALITY FOCUS

Setting the data management frequency to support data criticality.

Data governance needs to be in place to support data quality processes.

The data monitoring actions are considered with the following split.

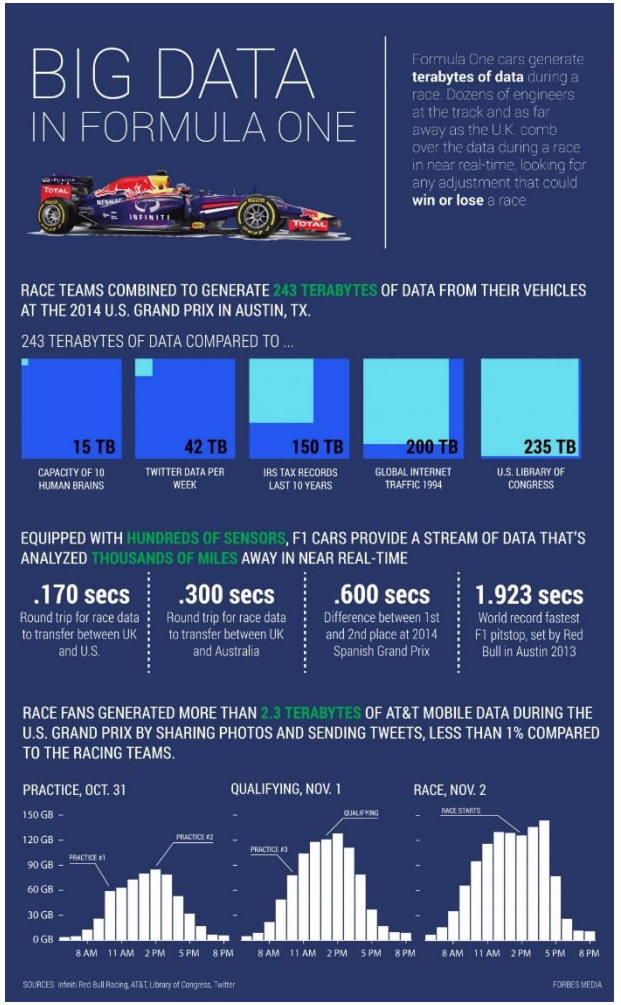


Source: Silvola doctoral thesis

Data driven strategy

When data drives everything:

1. Vision
2. Strategy
3. Master data needs to be 100% correct.
4. Everybody understand their role as a data owner
5. IT systems checks Data Quality in real time
6. Errors are minimized with feedback loops



What forms basis for One master data concept?

Study was done with 14 companies variation: Service business, Manufacturing, Food industry, consulting, telecom etc..
Reviewing the best practises written in theory against real life situation

Preconditions for one master data	Description
Data model	Common definition on data model to be used across the organisation
Data ownership	Clear data ownership definitions
Data quality	Proactive data quality surveillance
Culture	Data-friendly company culture
Roles and responsibilities	Clear definitions for roles and responsibilities
Organisational structure	Organisation structure built to support data processes
Processes	Clear definitions for processes
Managerial support	Business case and support from the managerial level
Information systems	Unified data model

Source: Silvola doctoral thesis

One master data perspective

- **Data model**
- **Data ownership**
- **Data quality**
- **Culture**
- **Roles and responsibilities**
- **Organisational structure**
- **Processes**
- **Managerial support**
- **Information systems**

100% result

Reality of the One master data concept in companies

- Most of the studied companies either had huge issues or loosely defined practices. Average result from all companies looks like this..

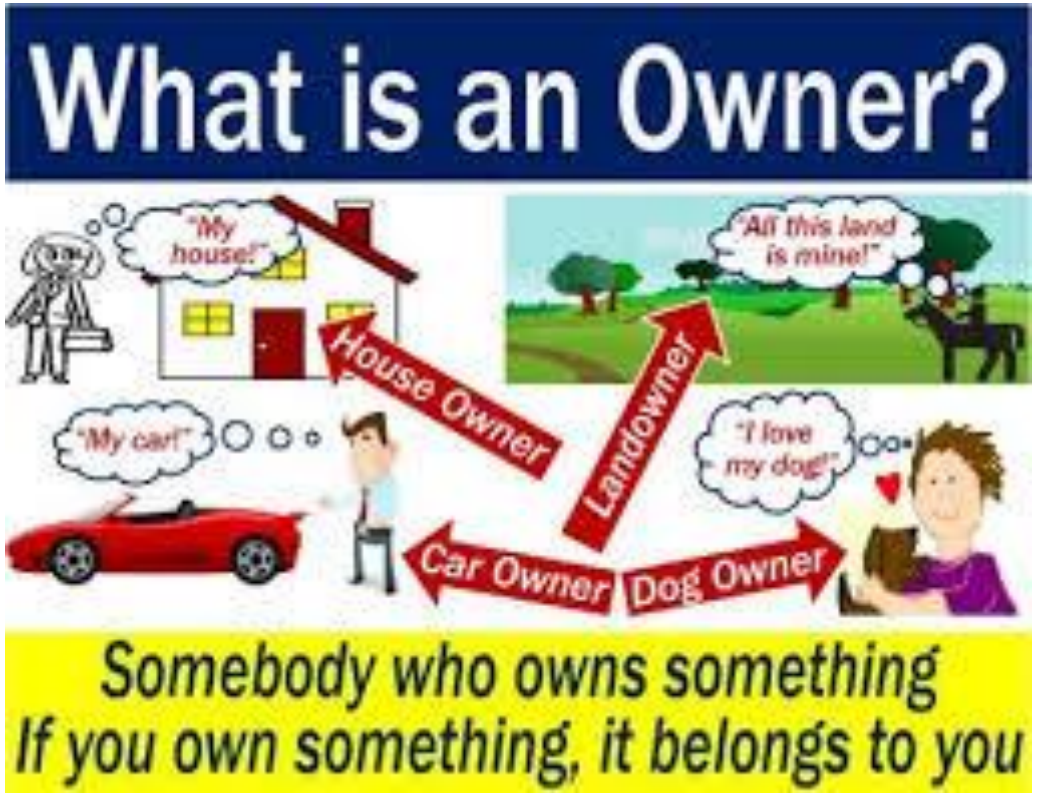
- ~~Data model~~
- ~~Data ownership~~
- ~~Data quality~~
- ~~Culture~~
- ~~Roles and responsibilities~~
- ~~Organisational structure~~
- ~~Processes~~
- ~~Managerial support~~
- ~~Information systems~~

25-60%

Green= Defined and exists according to best practices
Yellow= Some work done, but not completed
Red= Not in place

Data Ownership (DON)

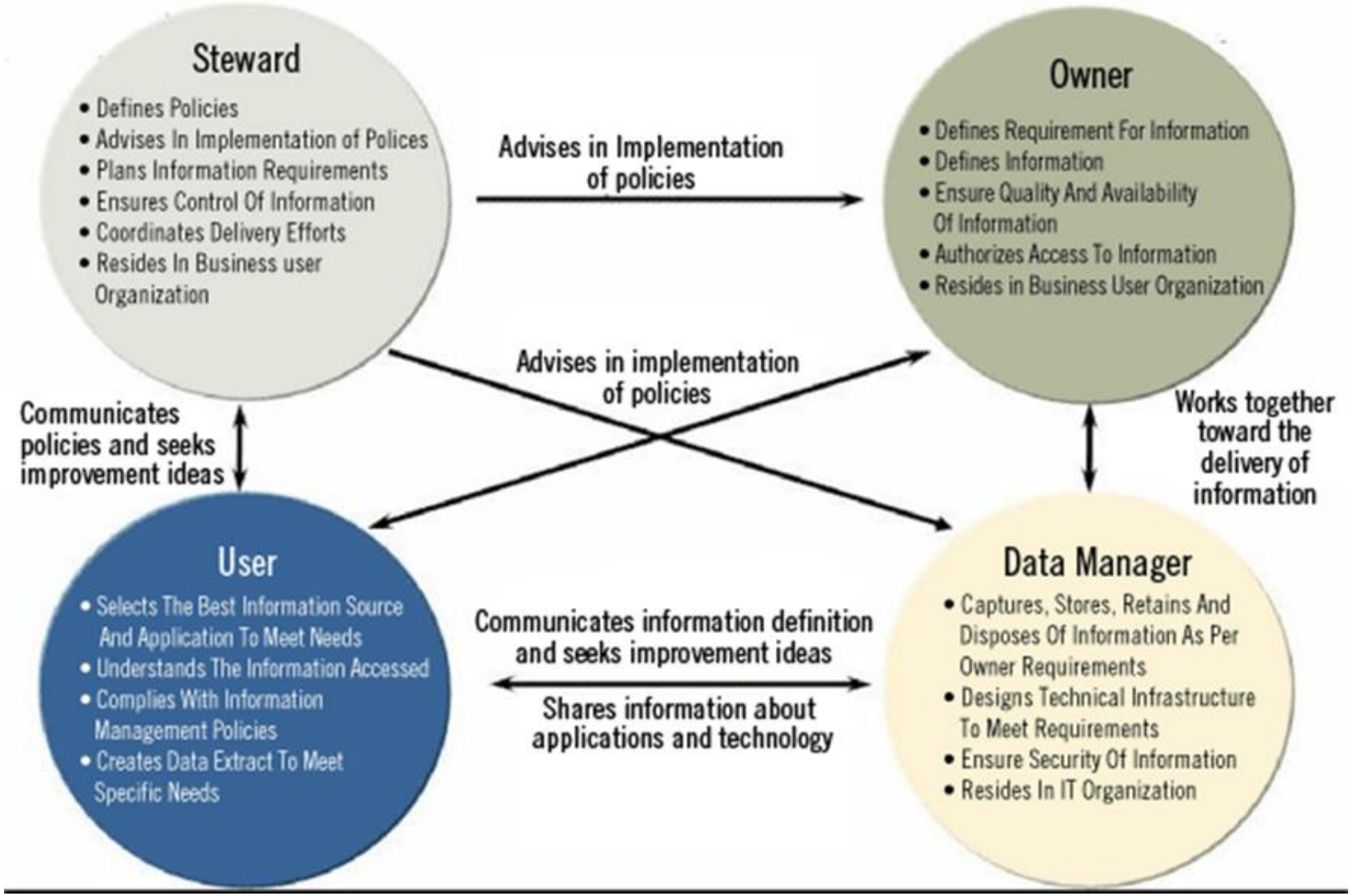
Ownership defition



How to implement ownership?

- Executive owner is needed to sponsor, set targets, follow up and provide resources
- Data executor/owns the specific data and acts under the executive owner keeping data roadmap&quality under control
- Data owners/subject matter experts take accountability from the data. Often several owners form a data owner network.

PRODUCT DATA OWNERSHIP NETWORK - Typical data governance organization roles (Cohen 2006).



Source: Cohen 2006

Data ownership is the act of having legal rights and complete control over a single piece or set of data elements.

It defines and provides information about the rightful owner of data assets and the acquisition, use and distribution policy implemented by the data owner.

The goal for Data Owner Network is to define and clarify roles and responsibilities for members of Data Owner Network in selected business environment. Persons who are involved setting up data parameters as defined or/and work with the data, need to know their own responsibilities and contact points whom they can ask advice.

Data Owner Network's one major goal is to reduce constant cost expenses, which are caused by incorrect data in data- and IT services. Costs will decrease if data errors can be avoided in future by these corrective actions.

Source:Silvola doctoral thesis

WHAT NEEDS TO BE AVAILABLE FOR DATA OWNERSHIP

PROCESSES, SYSTEMS AND DATA SUPPORTING THE BUSINESS EXECUTION

1. Processes, Guidelines

- Global Processes, Guidelines
- Business specific guidelines
- Data Quality
- Tools

2.Organizational Teams

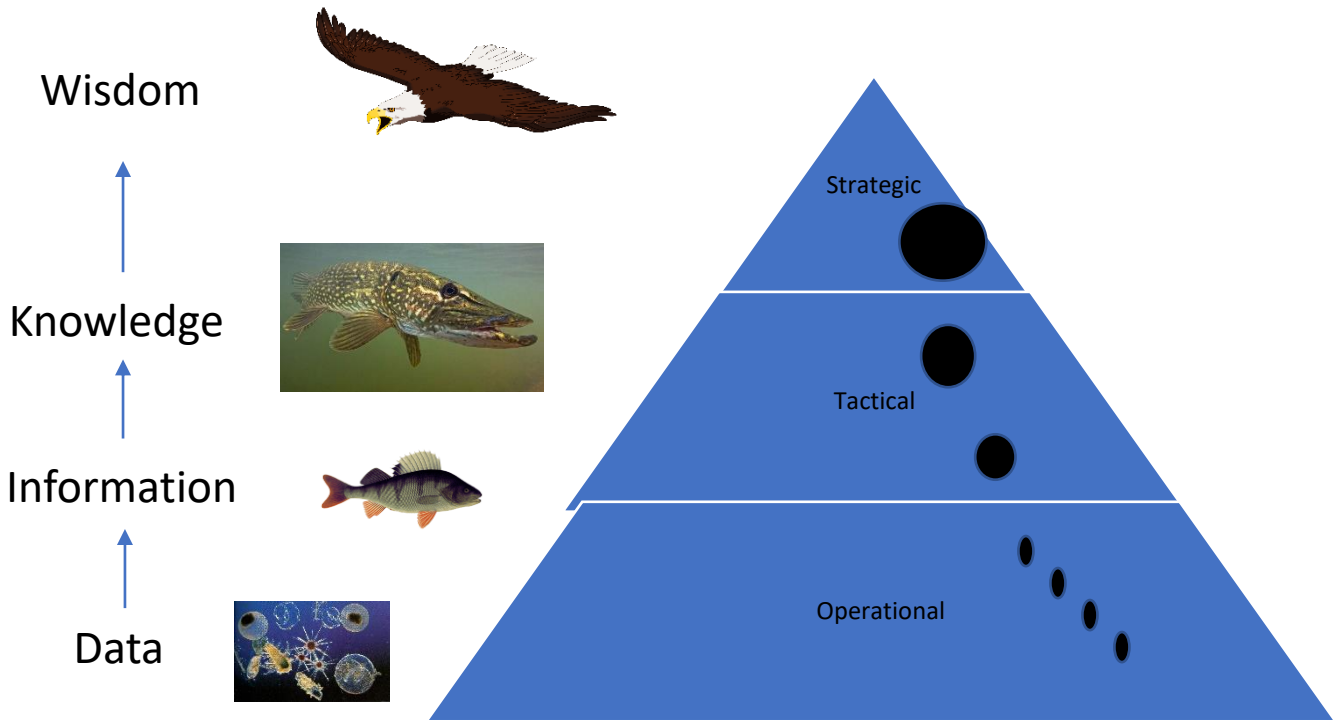
- BU/Line Management team
- Different line organisations that have data ownership (specific teams)
- Global support functions team

3. Execution Support

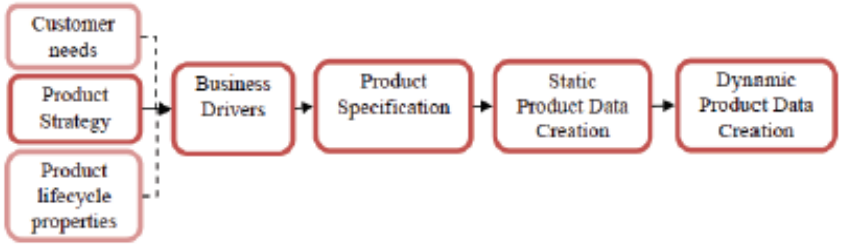
- Monthly Data governance/mgmt meetings
- Data to weekly business mgmt meetings
- …

Trusting your data, Does it support strategy?

What is common between food chain and one master data?



DDT poison almost killed all sea eagle's



Source: Silvola doctoral thesis

Definition - What does Business Driver mean?

- A business driver is a **resource, process or condition that is vital for the continued success and growth of a business**. A company must identify its business drivers and attempt to maximize any that are under their control. There are always outside business drivers that a company cannot influence, such as economic conditions or trade relations with other nations.

  As organizations become more complex, identifying business drivers becomes more difficult. For this reason, some software makers offer programs to help companies clarify and monitor their business drivers.

Secured and protected data

?

Data definitions as well paintings have specific structure and definition
Data definitions are not done for fun. But for purpose.

Data protection is needed to ensure that data stays in right condition and within owner's reach.
Dicipiline in organisation and across the organisations is needed. IT systems provide the ways to do this.
Integrations between the systems has to support data protection.

New ecosystems raise the importance of secured and protected data. It is etchical question.

AI and robotics needs to be teached what is acceptable behaviour.

~~Data Governance~~ or governance model of processes, data and IT together?

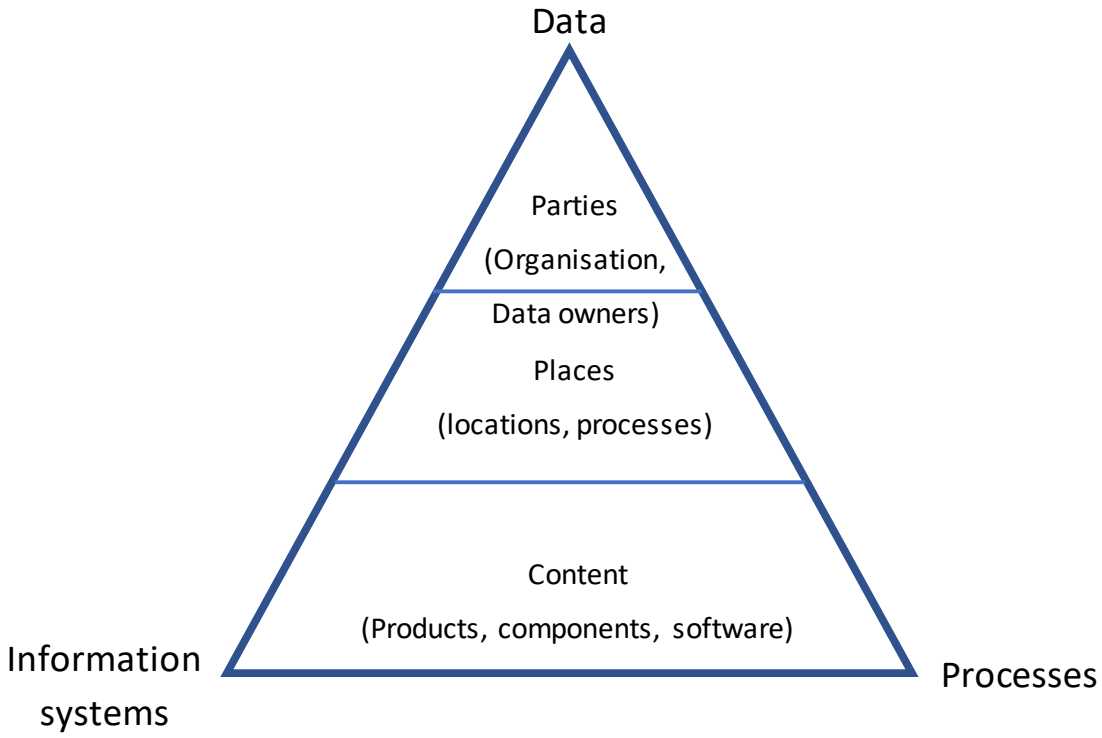
What are the challenges and preconditions for one product master data?

Element of one master data	Challenges	Responses
Data	Master data definitions are unclear Poor data quality	Identify the relevant business data Map the current state of the data Create a data model to support company's goals
Process	Data ownership is not clearly defined Incoherent data management practices No continuous data quality practices	Create a business case for gaining managerial support Start continuous data quality program Model the process for data life cycle
Information systems	Architecture and integrations between the applications cause data issues	Unify the data model Model the data flow's across the systems Minimise the number of applications and integrations

Source: Silvola doctoral thesis

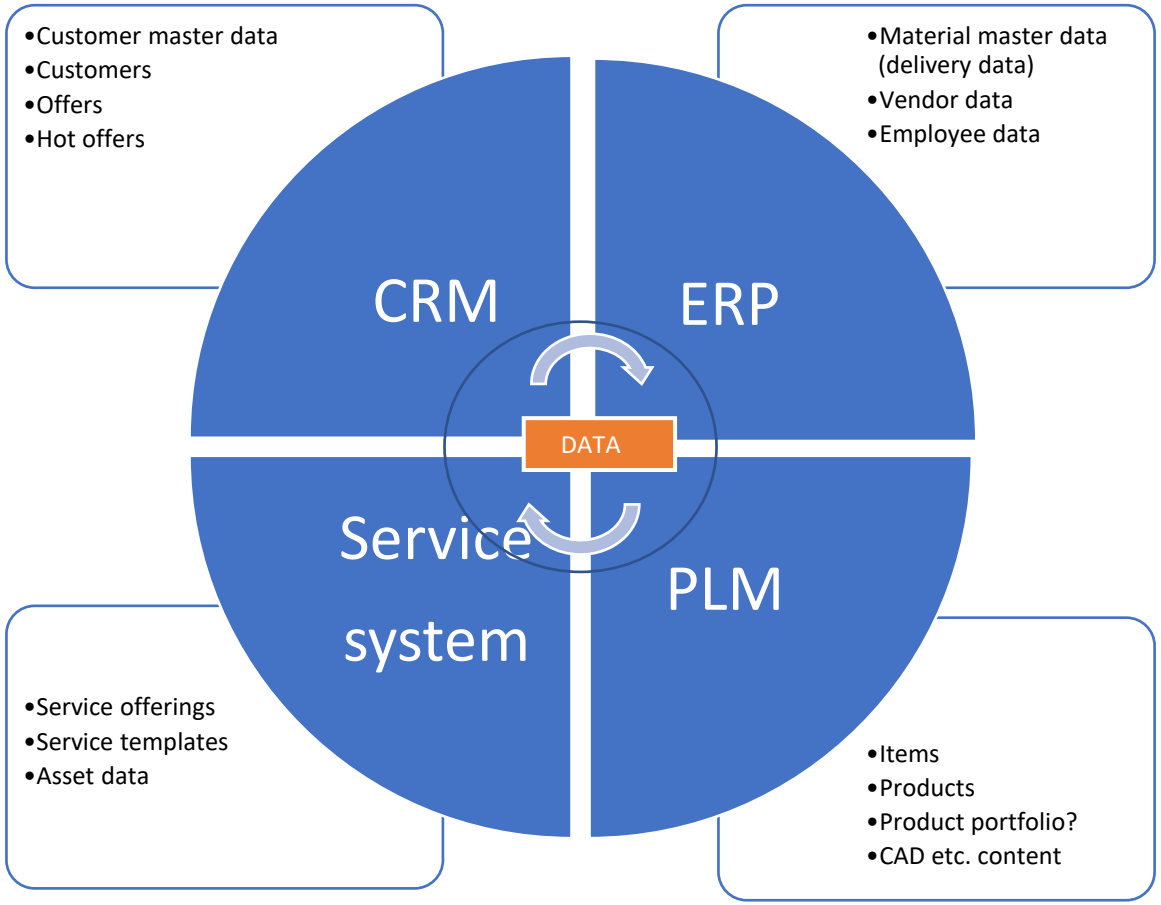
Right balance between processes, data and IT

Chair needs 3 legs



Source: Silvola doctoral thesis

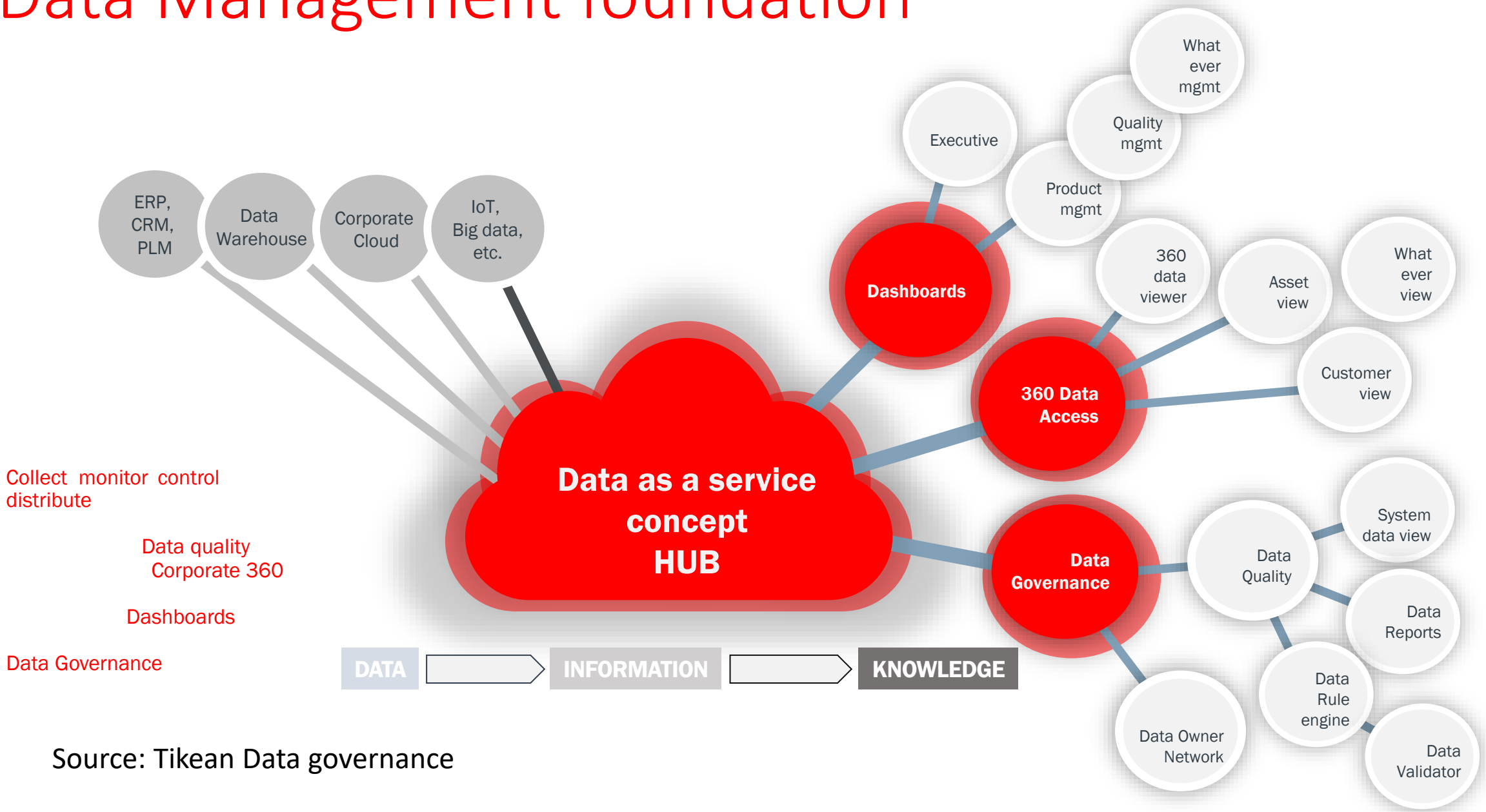
Enterprize architecture “Product DNA”



- Strive for **innovative** solutions based on latest technology
- **Govern** the architecture via design authority
- Understanding the architecture **dependencies** is a key to success
- Gaining business understanding means new ways of describing the data architecture.

Source: Silvola doctoral thesis

Data Management foundation



Collect monitor control distribute

Data quality
Corporate 360

Dashboards

Data Governance

Source: Tikean Data governance

CORPORATE 360 Data

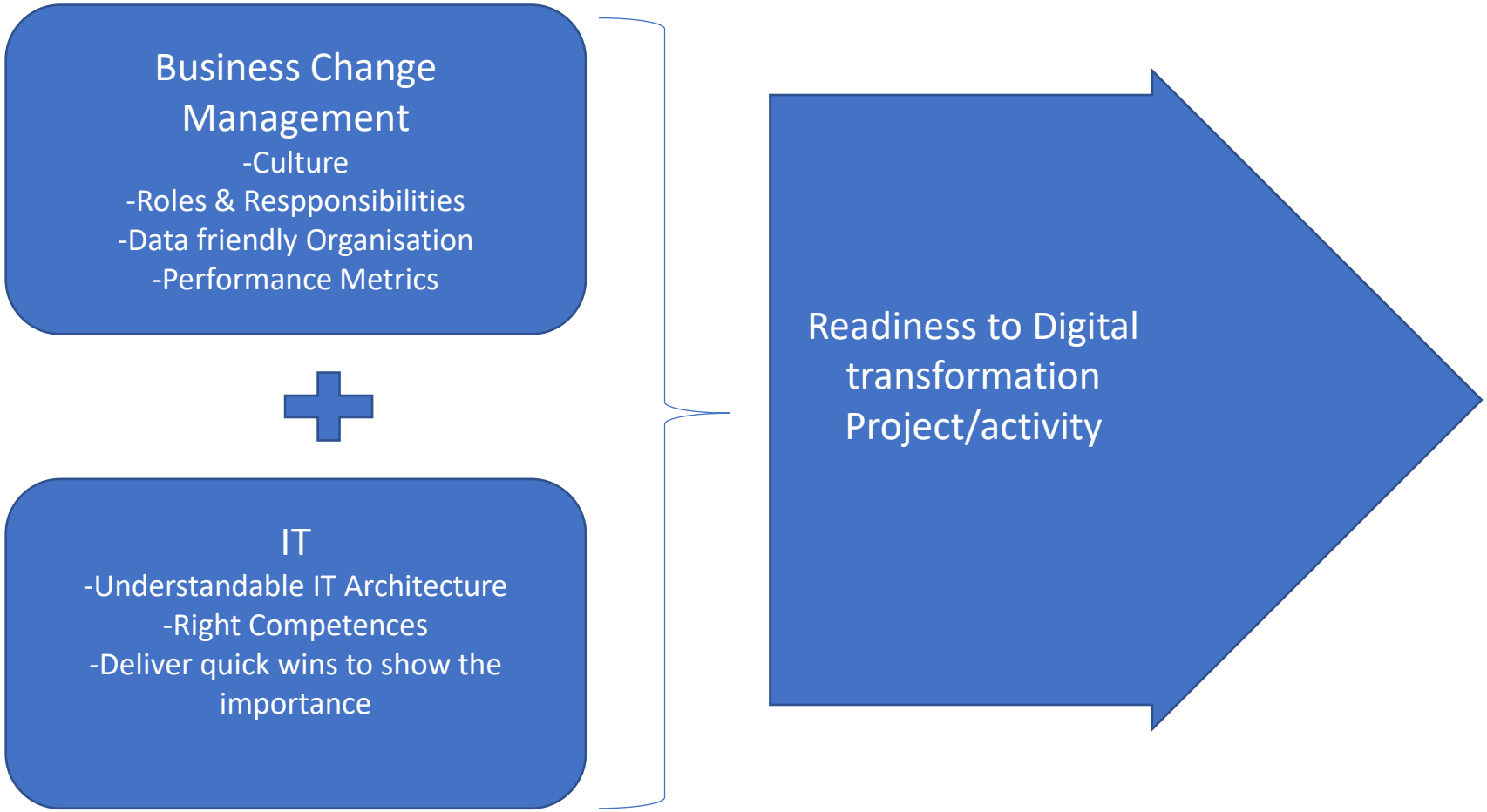
When data is commonly available, the 360 logic searches for any data cross references, providing extensive view across data domains and systems.

This provides the business tremendous value for any data retention and further business.

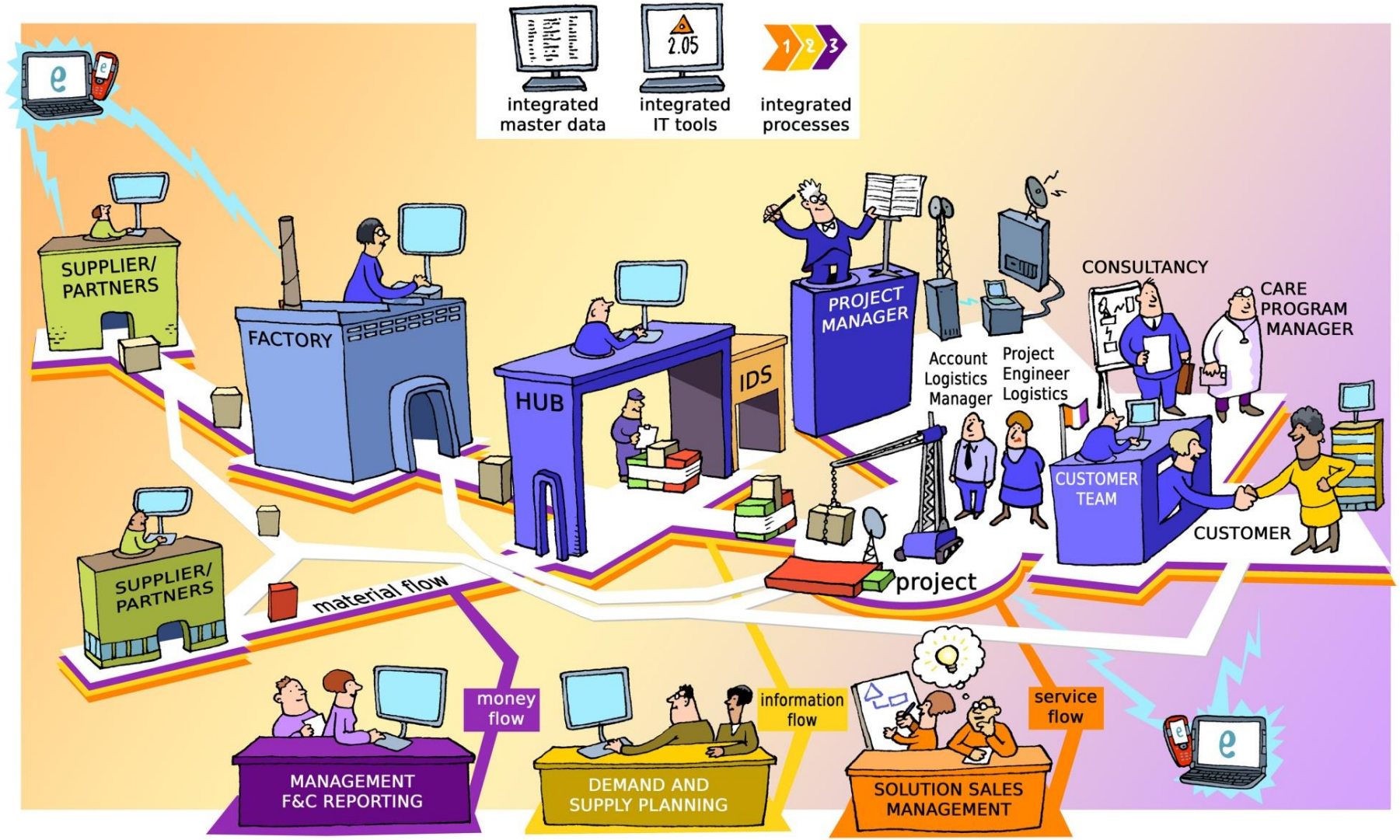
Domains and data can be virtually anything.

Source: Tikean Data governance

One Data Enablers



Integrated Processes and the role of data with data friendly corporate structure

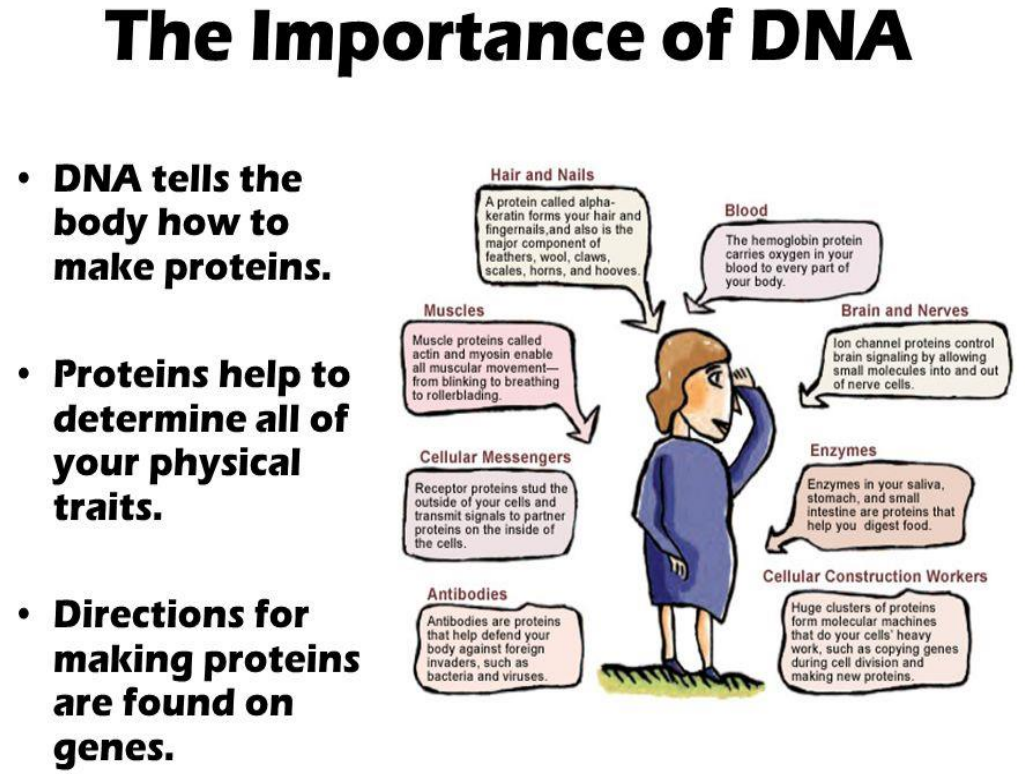


- Master data is information that is key to the operation of a business.
- This key business information may include data about customers, products, employees, materials, suppliers.
- While it is often non-transactional in nature, it is not limited to non-transactional data, and often supports transactional processes and operations.

Data DNA

Characteristics of product master data

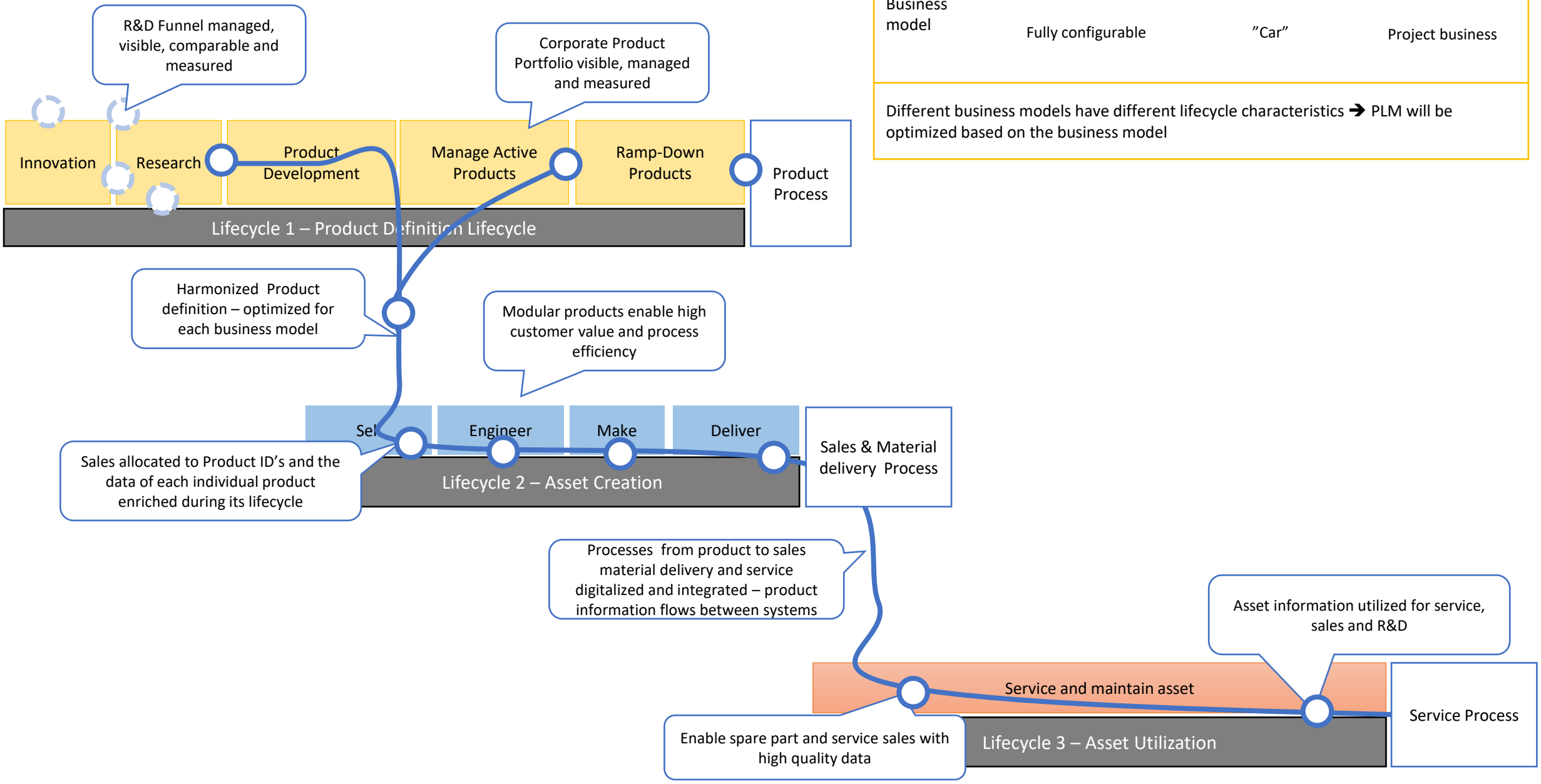
- Well defined and structured product master data tells how to sell products
- When product data is defined for manufacturing we can run seamlessly operations to build the products.
- Service people, engineering people can collaborate throughout the life cycle. When common data is missing, how can this happen?
- Digitalisation is possible when basic data management is in place.



DNA integrated product data

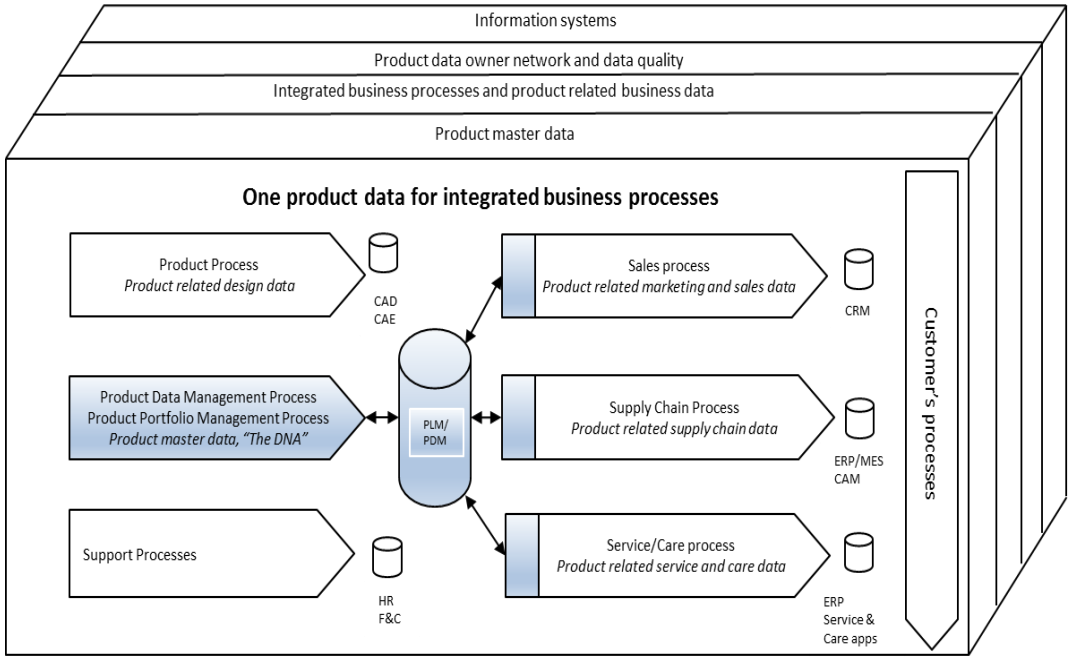
	100	80	50
Business model	Fully configurable	”Car”	Project business

Different business models have different lifecycle characteristics ➔ PLM will be optimized based on the business model



One product data for integrated business processes is based on..

- Data ownership is in place for the whole life cycle of the product
- DNA data is created once, but used in multiple places with right quality
- Additional business process specific data is added, but DNA part remains unchanged
- IT architecture and data architecture used across the main business processes



Source: Silvola doctoral thesis

Thanks for listening